National Transportation Safety Board
Washington, DC 20594

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Brief of Incident

Adopted 08/03/2009

SEA08IA080
File No. 24833 | 02/13/2008 | Hilo, HI | Aircraft Reg No. N651BR | Time (Local): 09:45 HST

Make/Model:	Bombardier, Inc. / CL-600
Engine Make/Model:	General Electric / CF34-3B1
Aircraft Damage:	None
Number of Engines:	2
Operating Certificate(s):	Flag Carrier/Domestic
Name of Carrier:	Mesa Airlines
Type of Flight Operation:	Scheduled; Domestic; Passenger Only
Reg. Flight Conducted Under:	Part 121: Air Carrier

	Fatal	Serious	Minor/None
Crew	0	0	3
Pass	0	0	40

Last Depart. Point:	Honolulu, HI
Destination:	Same as Accident/Incident Location
Airport Proximity:	Off Airport/Airstrip

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	None
Visibility:	10.00 SM
Wind Dir/Speed:	230 / 003 Kts
Temperature (°C):	22
Precip/Obscuration:	No Obscuration; No Precipitation

Pilot-in-Command Age: 53

Certificate(s)/Rating(s)
Airline Transport; Commercial; Multi-engine Land; Single-engine Land

Instrument Ratings
Airplane

Flight Time (Hours)

Total All Aircraft:	25000
Last 90 Days:	207
Total Make/Model:	8000
Total Instrument Time:	UnK/Nr

go! flight 1002 departed for its destination about 0916 Hawaii standard time. About 0930, the captain transmitted to air traffic control (ATC) that the flight was climbing through 11,700 feet to its cruise altitude of flight level (FL) 210 (approximately 21,000 feet mean sea level.) The controller acknowledged the transmission and cleared the flight to proceed to an intersection along the flight route located about 29 miles north-northwest of the destination airport, and the flight crew acknowledged. At 0933, during cruise flight, the controller repeated the navigational clearance, which the flight crew acknowledged, and the airplane turned in accordance with the clearance. At 0940, the controller instructed the flight to change radio frequencies, and there was no response. The controller continued to try to contact the flight crew multiple times but received no reply. At 0951, the airplane crossed the intersection that was its clearance limit then turned southeast toward the destination airport without descending, which is consistent with the airplane being on autopilot. The controller handling the flight asked another controller to attempt to contact the flight crew on a different frequency, but there was still no response, and the flight proceeded on a southeasterly heading at FL 210. About 0955, the flight crossed over the destination airport and continued on a southeasterly course without changing altitude or heading. Two separate airline crews in the area attempted to contact the incident crew, but neither flight crews' attempts were successful.

About 0958, when the flight was about 26 nautical miles southeast of the destination airport, the captain contacted the controller with an abbreviated call sign ("Ah HCF ten zero two"), and the controller asked if the flight crew was experiencing an emergency. The captain responded, "No, we must have missed a hand off or missed a call or something." The controller then issued instructions for the flight to return to the destination airport, with which the flight crew complied. The flight arrived without further incident about 1015.

The captain and first officer both reported to their company that they had unintentionally fallen asleep in flight. The fact that both pilots fell asleep during the midmorning hours, a time of day normally associated with wakefulness and rising alertness, indicates that both pilots were fatigued.

The captain had undiagnosed severe obstructive sleep apnea, which was diagnosed during a medical evaluation shortly after this incident and for which symptoms (such as snoring) and risk factors (such as obesity) were present before the incident. This condition likely caused him to experience chronic daytime fatigue and contributed to his falling asleep during the incident flight.

In addition, the day of the incident was the third consecutive day that both pilots started duty at 0540. This likely caused the pilots to receive less daily sleep than is needed to sustain optimal alertness and resulted in an accumulation of sleep debt and increased levels of daytime fatigue. The first officer stated he needed between 7.5 and 8 hours of sleep per night to feel rested. He estimated that he had spent about 7 hours 25 minutes in bed the night before the incident, and about 6 hours 55 minutes in bed during each of the previous two nights. Thus, the first officer's self-reported sleep history indicated an accumulated sleep debt of between 1 hour 15 minutes and 2 hours 45 minutes in the 72 hours before the incident. The first officer's reduced sleep probably resulted from the flight crew's recent work schedule. The effect of early start times on sleep is well documented. A 1998 National Aeronautics and Space Administration Report, "Flight Crew Fatigue II: Short-haul fixed wing air transport operations," for example, concluded that requiring early report times makes it more difficult for crewmembers to obtain adequate sleep. Further, a 1998 report published by North Atlantic Treaty Organization Research and Technology Organization (formerly AGARD), "Early starts: Effects on sleep, alertness, and vigilance," concluded that pilots reporting before 0600 had a significantly shorter total sleep time, impaired sleep quality, and impaired performance both pre-flight and at top of descent. The pilots also were flying eight legs a day, requiring many takeoffs and landings, which are high-workload phases of flight.

The incident pilots' lack of adequate sleep, together with the low workload associated with the cruise phase of the flight, likely contributed to the pilots inadvertently falling asleep.
Updated at Aug 3 2009 5:35PM

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OCCURRENCES

Enroute-climb to cruise - Miscellaneous/other
Enroute-cruise - Miscellaneous/other

FINDINGS

Personnel issues-Physical-Alertness/Fatigue-(general)-Flight crew - C
Personnel issues-Physical-Alertness/Fatigue-Fatigue due to work schedule-Flight crew - F
Personnel issues-Physical-Alertness/Fatigue-Lack of sleep-Flight crew - F

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this incident as follows.
The captain and first officer inadvertently falling asleep during the cruise phase of flight. Contributing to the incident were the captain's undiagnosed obstructive sleep apnea and the flight crew’s recent work schedules, which included several consecutive days of early-morning start times.